On the Subspecies and Aberrations of Coccinella 11-punctata L.

(*With a plate.*)

By HORACE DONISTHORPE, F.Z.S., F.E.S.

There appears to be a considerable diversity of opinion amongst Entomologists as to the advisability of giving names to varieties and aberrations of insects—some, such as Sir George Hampson, object to it entirely, others take the opposite view. Others again are inconsistent accepting some and not recognising other such named forms (not wishing such new names to be given, but admitting those which have been already published; and even accepting some such name for one species, and objecting to an exactly parallel form in another species of the same genus having a name).

In an admirable paper read before the Entomological Society of London, on February 6th, 1918, Lord Rothschild showed very clearly the reason for giving names to geographical races and aberrations. With his views I entirely agree, and I propose to quote some extracts from the paper in question.

"Nomenclature was invented to enable people at a distance and also when in company to discuss the objects of their mutual study in the easiest and shortest manner possible. Now Linnæus, the father of our zoological nomenclature, established the categories of genus and species, and used the word *varietas* to denote local or geographical race . . . . . but later authors used the word *varietas* to denote both local race and individual variation, so the bulk of modern zoologists have abandoned the use of the word *varietas* altogether. They substitute for it the words SUBSPECIES, denoting local or geographical race, and ABERRATION denoting an individual variation . . . .

"As to the desirability of naming local races and individual variations, surely the case is its own justification. It is much clearer, much shorter and less cumbersome to say *Colias fieldi chinensis* than to be obliged to put the 'large Chinese brilliantly coloured race of *Colias fieldi*,' or the 'broad banded variety without blue submarginal spots of *Vanessa antiopa*,' instead of *Vanessa antiopa* ab. *hygeia* . . . .

"The rules laid down by the International Commission on Nomenclature are the only possible ones to be followed, *viz.*, each species must have a generic and specific name, and a subspecies must be treated trinomially by adding the name after the specific name of the typical, or rather nymotypical form, while the names of individual variations should be written after the specific name but preceded by AB."

I will now proceed to consider the subspecies and aberrations of the Eleven spot Lady-Bird (*Coccinella* 11-*punctata* L.).

It may be as well, however, to point out that in any investigation such as this paper deals with, it is absolutely necessary to consult all the original descriptions oneself; as not only are the references, dates and pages often given incorrectly in catalogues, etc., but some authors take the liberty to construe the original descriptions to suit themselves, adding to some parts of them and disregarding others, which not only leads to confusion, but is, moreover, unscientific and inaccurate.

JULY 15TH, 1918.

The following list gives the original description of all the subspecies and aberrations of *Coccinella* 11-*punctata* known to me.

The aberrations appear to be rare, and are usually only found singly. There are very few examples of such forms in the series of this insect in the general collection at the Natural History Museum, and none in the British collection. Some, however, may be represented in private collections belonging to British Coleopterists; as is the case in my own. I give the British records in all such cases as I am aware of, and perhaps if our Coleopterists will examine their series they will be able to add further instances.

Let us state here that it is much clearer, and much shorter and less cumbersome, to say *Coccinella* 11-*punctata boreolitoralis* than to be obliged to put "the brightly coloured race of *Coccinella* 11-*punctata* with spots two and three, and four and five, on the elytra large and confluent, which is found in the north, in Iceland, Scotland and Ireland, on sand-hills in restricted areas by the sea," and *Coccinella* 11-*punctata* ab. *confluens*, instead of "the variety of *Coccinella* 11-*punctata* with the spots two and three on the elytra confluent."!

I have to thank Dr. Chapman and Lord Rothschild for kindly allowing me to quote their views, and Dr. Sharp for kindly lending me his copy of the *Bestimmungs-Tabellen der europäischen Coleoptera*, ii. Heft. *Coccinellidae* ii. (J. Weise), 1885; which I was unable to find in any other library.

Coccinella 11-punctata L., Syst. Nat., 10th edtn. **1**, 366 (1758).

"11-*punctata*, 11 C. coleoptris rubris: punctis nigris undecim.
Faun Svec., 394.
Merian europ., 168.
Habitat in Europa."

This species occurs in Europe, N. Africa, Asia, N. America to California; chiefly in the neighbourhood of the sea.

It is generally distributed and common in the British Isles.

Coccinella 11-punctata L., ab. **pura Weise,** Bestimmungs-Tabellen, Eur. Col., 29 (1885).

"(b) Fld. einfarbig roth—v. *pura* Ws."

Coccinella 11-punctata L., ab. **tripunctata L.,** l.c. 365.

"3-punctata. 3. C. coleoptris rubris: punctis nigris tribus.
Habitat in Europa.
Puncta duo ad apicem coleoptrorum."

Coccinella 11-punctata L., ab. **4-maculata F.,** Mant. Ins., **1**, 56 (1787).

"4-*maculata*. 30. C. coleoptris rubris: punctis quatuor baseos nigris, thorace atro: macula marginali alba.
Differt manifeste a *C.* 4-*punctata*. Caput nigrum punctis duobus baseos pallidis. Thorax niger, nitidus macula marginali, magna, alba.
Elytra rubra punctis duobus 1.1. nigris. Corpus nigrum.
Habitat Halae Saxonum. Dom. Hybner."

Weise [l.c. 110 (1879)] gives the formula for this aberration "P. 3, 5, ½"; and Ganglbauer [Kafer Mitteleuropa, **3**, 1008 (1899)]

writes " . . die Punkte 1, 2, 3, fehlen." Neither of these views appear to me to agree with the description of Fabricius.

Coccinella 11-punctata L., ab. **peregrina** Weise, l.c. 110 (1879).

" bb. P. 1, 5, ½ . . . . . v. *peregrina*."

The European Catalogue [363 (1906)] incorrectly gives page " 23 " instead of 110.

Coccinella 11-punctata boreolitoralis n. subsp. (= *C.* 11-*punctata* L., var. *confluens* Donis. [*Ent. Rec.*, **14**, 99-100 (1902)] nec. *confluens* Haworth.

This variety is very brightly coloured, with the basal pair of spots on the elytra (2 + 3, and 4 + 5) two and three, and four and five, large and connected by a broad black band. The insect has a very distinct appearance, looking quite unlike the type form and aberrations found further south. It is confined to sand-hills by the sea, in restricted areas in the north.

The following records of this striking looking subspecies may be found :—

" *Coccinella* 11-*punctata* L. Specimens all brightly coloured, and the lower pairs of spots on the elytra confluent ; four specimens only. All taken near Reykjavik." (Mason) Insects in Iceland, 1889 [*Ent. Mo. Mag.*, **26**, 199 (1890)].

" *C.* 11-*punctata*. The only form of this insect which I found is the var. d. of Mulsant, with the side spots large and confluent, called *brevifasciata* of Weise. I have never seen this form before ; it does not appear to have been taken by many English or Scotch collectors. The type form did not turn up at all ; the larva occurred on the salt marsh, under sea-weed, rubbish, etc., it is a puzzle to me what it usually feeds on." (Chitty) Cullin Sands, Morayshire [*Ent. Mo. Mag.*, **29**, 70 (1893)].

Chitty wrote " var. d of Mulsant " in error for " var. g " ; and he probably intended to write " any," instead of " many " collectors.

" *Coccinella* 11-*punctata*, abundant on Machrihanish beach, nearly all the specimens observed having very large and confluent black spots, giving them a very different aspect from southern examples of this abundant species." (Walker.) Cambletown, N.B. [*Ent. Mo. Mag.*, **32**, 111 (1896).]

" *Coccinella* 11-*punctata* var. *confluens*, n. var. In 1890, in the *Ent. Mo. Mag.*, p. 199, Dr. Mason records amongst other Coleoptera from Iceland, a form of *Coccinella* 11-*punctata*, brightly coloured, and with the lower pairs of spots on each elytron confluent. This reminded me of a specimen sent for me to see by Canon Cruttwell some time ago. He now writes to me, ' It was taken in considerable numbers on a patch of sandy coast near Renvyle, co. Galway, in August, 1899, and quite apart from any colony of the ordinary form, though that also occurred sparingly on other portions of the same coast. I am quite certain of this, for I searched carefully on two occasions expressly to satisfy myself that the common type was really absent from the locality.' Dr. Mason also mentioned that none of the type form were found. Mr. Gorham tells me it is the var. G. of Mulsant, and he further says, ' I think it is a fact that the *Coccinellidae* tend to vary both ways, *par*

excès, or *par défaut*, at the extreme latitudes of their distribution.' " (Donisthorpe.) [*Ent. Rec.*, **14**, 99-100 (1902).]

My name must sink, as Haworth had already described a form of *C.* 11-*punctata* in 1812 as *confluens*.

". . . . the var. *confluens* Donis., occurred in numbers on the sandhills, in a similar place to that in which the Rev. Canon Cruttwell took it in Galway—with us it was accompanied by the type. It is evidently a regular Irish and Northern form, having been found in Iceland, and then, as with Canon Cruttwell, not accompanied by the type. The larvæ were feeding on *Aphis* on *Lotus corniculatus*." (Donisthorpe) Coleoptera in Kerry. [*Irish Nat.*, **12**, 62-63 (1903).]

What I referred to as the type is of course an aberration of this subspecies with 11 spots, it was, moreover, very scarce. In the same way, among Chitty's series of this subspecies from Morayshire (now at Oxford), are specimens of an aberration with spots 2 and 3 confluent, as in the ab. *confluens* Haw., in the type species.

"*C.* 11-*punctata* L., var. *confluens* Donis. (*Ent. Rec.*, 1902, p. 99). This form has the lower pairs of spots on each elytron confluent, it is also brightly coloured." The localities are then given and we state—"This seems to be the var. *brevifasciata* Weise, *but as that appears to include three different forms, it is perhaps as well to retain Mr. Donisthorpe's name*, which is recognised in the last European Catalogue." (The italics are mine.) A very good coloured illustration of this variety is given on Plate xii., fig. 8. (Fowler and Donisthorpe.) [*Col. Brit. Isles, Supplement*, **6**, 105-6 (1913).]

"Finally, there remain a few cases which I think we might attribute to the specializing effect of insularity—a factor which possibly explains some of the peculiar forms noted from Lundy and Scilly Islands—for it is obvious that the more circumscribed the area the less chance would there be of any particular variation, arising how it might, from becoming obliterated by free crossing with normal forms. Such is . . . . the var. *confluens* Donis., the only form of *Coccinella* 11-*punctata* seen in the island, ..." (W. E. Sharp.) On Coleoptera taken by Donisthorpe on Tiree. [*Ent. Rec.*, **25**, 20, 22 (1913).]

This subspecies was abundant in restricted areas, on sand-hills amongst *Lotus*, on the Isle of Tiree; no aberrations being seen nor taken with it.

"In *Coleopt. Brit. Isl.*, vi., p. 106, the name of *C.* 11-*punctata* var. *confluens* Donisth., is retained on the ground that it is recognised in the last European Catalogue; but there are at least three reasons why the name in question is untenable: (a) the name *confluens* is preoccupied for a variety of the same species by Haworth, 1812; (b) the the insect has a prior name, *e.g.*, *brevifasciata* Weise; (c) the publication of the name was unaccompanied by a description of the insect." (Edwards.) [*Ent. Mo. Mag.*, **50**, 143 (1914).]

Mr. Edwards' statement as to the reason why the name *confluens* is retained in the Supplement (Fowler, vol. vi.) is incorrect, as will be seen above. As to his reasons why he considers the name untenable—(a) is correct, except that Haworth's insect is an aberration and *not* a variety; (b) is not the case in my opinion, as Weise's name, as I have tried to show, refers to an aberration of the type form; (c) is not the case, as § *confluens* Donis., is sufficiently described to validate the name, had it not been invalid as a homonym of *confluens* Haw.

I submitted the above evidence to my friend Dr. T. A. Chapman, and he writes—"The facts *re C.* 11-*punctata* seem from the history you give to be very clear and distinct. There is the type form

1.—11-*punctata*.

2.—A subspecies, northern and littoral, which wants a name (*confluens* being preoccupied) implying Northern or littoral, or, if possible, both, would be appropriate.

"1.—*C.*11-*punctata* type has certain abs.

1a, *confluens* Haw.

1b, *tamaricis* Weise.

1c, *brevifasciata* Weise; etc.

"2.—*C. confluens* Donis., is a distinct race, not an ab., is very like *brevifasciata*, but differs by having a much higher ground colour. But if it were *absolutely identical* in facies, it would not alter the fact that it is a race, the other only an ab.

"2.—*C.* (*confluens* Donis.), has an ab. parallel to 11-*punctata* type, but with brighter colouring, and probably has abs. parallel to *confluens* Haw., and *tamaricis* Weise, etc.

"It may be doubtful if these abs. are entitled to the same names as the similar abs. of the type, especially if they have the ground colour of the subspecies.

"Staudinger uses the formula *var. et ab.*, *i.e.*, giving the same name to a race that had been given to an ab. This cannot be sound, whatever any authorities may say.

"I assert that a 'race' differs from the typical race if it is geographically distinguishable, but as regards forms represented, need not differ more than by having the several forms in different proportions to those that are present in the type, *i.e.*, all forms in the one may be present in the other, but in different numbers."

Coccinella 11-punctata L., ab. **vicina** Weise, l.c. 110 (1879). [The *European Cat.* gives page 23 in error.]

"cc. P. 3, 4, 5, ½; 4 und 5 oft leicht verbunden, v. *vicina*."

Coccinella 11-punctata L., ab. **variegata Weise**, l.c.

"dd. P. 2, 3, 5, ½ . . . . v. *variegata*."

Coccinella 11-punctata L., ab. **litoralis Weise**, l.c.

"ee. P. 2, 4, 5, ½ . . . . v. *litoralis*."

Coccinella 11-punctata L., ab. **9-punctata** L., l.c. 365.

"9-punctata. 9. C. coleoptris rubris: punctis nigris novem.
Uddm. diff. 14. Coccinella nigra, elytris rubris, punctis novem nigris.
Habitat in Europae *Juniperetis*."

I swept up a specimen of this aberration in company with the ab. *confluens* Haw., and the type, at Sandown, I. of W., August 12th, 1913; Oxshott, iv. 16; Mickleham, ix. 16 (Ashdown).

Coccinella 11-punctata L., ab. **westmani** n. ab. [=*Coccinella oculata* (Westman). Thunberg Dissertationes Academicae Upsaliae, 3, 117 (1801), Tab. vii., Fig. 18 (described in *Dissertatio de Insectis Suecicis*); nec *Coccinella oculata* Thunberg Diss. Nov. Ins. Spec., 14-15 (1781) "Hab. in Capite bonae spei;" nec. *Coccinella ocu-*

lata F. Ent. Syst., 1 (1) 287, sp. 98 (1792), "Hab. in America borealis."].

"*C. oculata* Mus. Acad. P. 3. p. 33. diversa a *C. oculata* Fab. Ent. Syst., p. 287.

Magnitudine C. 5-punctatae.

Caput nigrum, flavo-maculatum.

Thorax niger, angulo antico flavo.

Elytra rubra: punctis 9 nigris, quorum 1 scutellare commune, 1 in basi, 1 pone medium, 1 in ipso margine antice et 1 intra marginem pone medium singuli Elytri.

Abdomen uti et *pedes* nigri."

The European Catalogue gives "*oculata* Thunb. Diss. 107" as a synonym of the ab. 9-*punctata* L. The page should be 117, as shown above. We here find there are no less than three species with the name *oculata*. Fabricius's *oculata*, 1792, sinks as a homonym Thunberg's 1781. Thunberg's *oculata*, 1781, is quite a different insect to that of his 1801, and belongs to another genus; the description is as follows:—

"C. OCULATA: *Elytris rubris, punctis novem nigris, circulo flavo circum oculos. Fig. 18.*

Habitat in Capite bonae spei.

Corpus magnitudine *C. 7-punctatae.*

Caput nigrum, margine antico et circulo oculorum flavo. *Oculi* nigri.

Thorax ater puncto in angulo antico utrinque flavo.

Elytra rubra, punctis novem nigris: unum in ipsa costa, unum versus marginem exteriorem ante medium, unum versus suturam in medio elytri, et unum commune in sutura prope basin.

Abdomen et *Pedes* atra.

Valde similis COCC. NOVEM-PUNCTATAE; *differt vero:*

(α) *Longitudine fere quadrupla.*

(β) *Punctis inverso ordine positis.*

(ν) *Capite immaculato cum circulo oculorum flavo.*"

Coccinella 11-punctata L., ab. **saloslae Weise**, l.c.

"hh. P. 1, 3, 4, 5, ½ . . . . v. *saloslae.*"

Coccinella 11-punctata L., ab. **cakiles Weise**, l.c.

"ii. P. 1, 2, 3, 5, ½ . . . . v. cakiles."

Ganglbauer (l.c.) spells it with a k.

Coccinella 11-punctata L., ab. **obliquesignata J. Müll.**, Ver. Zool. Bot. Ges. Wien., 51, 521 (1901).

"Es sind hier, wie bei ab. *novempunctata*, auf den Flügeldecken die Punkte ½, 2, 3, 4, and 5 vorhanden, jedoch fliessen die Punkte 4 und 5 zu einer schragen Makel zusammen." Dalmatia.

Coccinella 11-punctata L., ab. **confluens Haworth**, *Trans. Ent. Soc. Lond.*, **1**, 274 (1812). (=v. *longula* Weise, l.c.)

"β. *confluens*, punctis duobus disci anticis confluentibus.

Long. Corp. 1¾ lin. Varietas rarissima. Communicavit S. Wilkini."

Mr. W. E. Sharp took one specimen of this ab. in company with the type, which occurred in abundance, under bark of palings near the sea at Skegness, in 1912. As before mentioned I swept a specimen at Sandown, I. of W., in 1913. Mr. Ashdown has taken it at Ripley, Oxshott, Mickleham, and Leatherhead. The bands which join the spots together vary in breadth.

Coccinella 11-punctata L., ab. **tamaricis Weise**, l.c.

"Normalfarbung.
f. P. 4 und 5 bilden eine Querbinde . . . . v. *tamaricis*."

Coccinella 11-punctata L., ab. **ocellata Churcheville**, *Mis. Ent. Rev. Ent. Int.*, **8**, 26 (1900). The European Catalogue gives the date incorrectly as "1901."

"Thorax noire avec une tache flave subtriangulaire aux angles antérieurs. Élytres rouges, marquées de 11 points noirs ocellés de jaunâtre : disposés 1, 2, 2, $\frac{1}{2}$; dimension 4. Cette forme diffère doncdu type par les ocellations des points, lesquelles lui donnent un aspect fort agréable.

Nous avons capturé cette belle variété sur un *Ulex*, commune de Bignon (Loire-Inférieure).

I saw a specimen of this pretty aberration at Barton Mills, on October 6th, 1917, which had just been taken by beating young Scots firs.

Coccinella 11-punctata L., ab. **brevifasciata Weise**, l.c., 111. The European Catalogue gives the page as "24."

"Normalfarbung.
§. P. 2 + 3, 4 + 5 breit verbunden . . . . v. *brevifasciata*."

In 1885 Weise [l.c. p. 30 (1885)] endeavoured to include his abs. *longula* (which as has been shown is a synonym of Haworth's *confluens*) and *tamaricis*, with his ab. *brevifasciata*.

This form is evidently only an aberration, found with the type, of the normal colour, etc. It is evidently the var. δ (var. β. Syst. Cat.) of Stephens [Man **4**, 368 (1831)], and the var. G. of Mulsant [Sécuripalpes, 75 (1846)]. Had it been a highly coloured *local race* found on sand-hills near the sea, Weise, Stephens, and Mulsant, would have stated the fact. Rye [*Trans. Leicester Lit. Phil. Soc.*, **3**, 481 (1895)] records a specimen from Swanage of a form of *C. 11-punctata* with "the spots on disc of elytra confluent," and I took it near Millwall Docks on July 4th, 1893, when the type was very common.

Coccinella 11-punctata L., ab. **nigrofasciata Rossi**, *Faun. Etrusca*, **1**, 62 (1790).

"Coleoptris rubris, punctis nigris octo ; fascia media atra. Omnino simillima antecedenti. Differt tantum quod habet ulterius fasciam atram, flexuosam in medio elytrorum a puncto communi baseos enatam."

Edwards (l.c.) states—"Some specimens of *C. 11-punctata* from Renvyle, co. Galway, given to me by the late Canon Cruttwell, belong to var. *nigrofasciata* Rossi ($2+3+\frac{1}{2}$, $4+5$)." It is probable that Cruttwell took these specimens in company with my subsp. *boreolitoralis* (*confluens* Donis., 1902), in which case they would be an aberration of my subspecies.

Edwards' formula, however, does *not* agree with Rossi's description, which, as correctly stated by Ganglbauer, has spots $\frac{1}{2}$ and 3 united.

Coccinella 11-punctata menestriesi Mulsant, *Spec. Col. Sécuripalpes*, 104 (1850) ; (=*aegyptiaca*, *Reiche. Ann. Soc. Ent. France*, **1861**, 212).

"Ovalaire. Prothorax noir, paré sur les côtés d'une bordure d'un blanc flave,

plus large en devant, plus étroite sur les deux cinquièmes. Élytres d' un jaune roux, flaves sur les côtés de l'ecusson; parfois unicolores, ordinairement marquées d'une tache scutellaire et chacune de cinq points, noirs: un sur le calus, et deux paires obliques, d'avant en arrière, de dehors en dedans: les externes, vers les deux septièmes et deux tiers de la longueur. Epimères des médi-et postpectus, blanches."

This subspecies occurs in Egypt, Syria, S.E. Russia, Siberia, and California.

All the above names of vars. and abs. are given in the European Catalogue [363 (1906)], (though some of them, following Weise, are incorrectly given as synonyms), with the exception of *boreolitoralis* which of course is mentioned as *confluens* Donis.

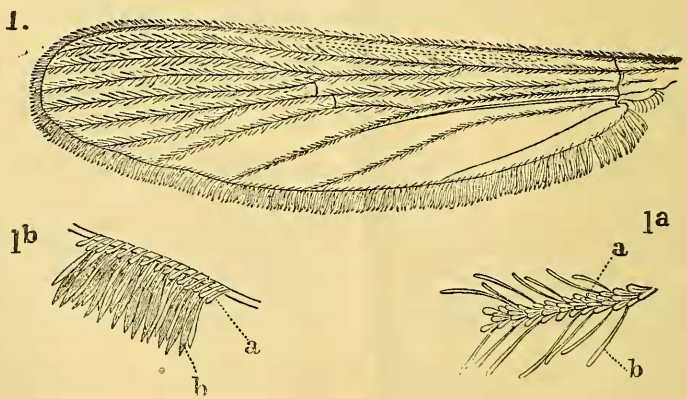
Coccinella 11-punctata L. ab. **magnopunctata Rybakow,** *Hor. Soc. Ent. Ross,* **23**, 289 (1889).

"Var. *magnopunctata* m—Die Flügeldecken mit 11 typischen Punkten; es treffen nur $\frac{1}{2}$, 3, und 5 ungemein gross auf, und dadurch ist leicht diese Varietät von allen bis jetzt bekannten zu unterscheiden."

Ganglbauer gives the spots $\frac{1}{2}$, 2, and 4 as being larger.

Mosquitoes and Malaria.

By the kind permission of the Trustees of the British Museum we are able to reproduce the following figures, which may still further aid in the identification of specimens, whether they are harmless Culicine gnats or the malaria-carrying Anophelines.



Wing of the Common House-Gnat or Mosquito, Culex pipiens. × about 16.

1a. Portion of 2nd longitudinal vein, greatly enlarged, to show covering of scales.
a. Median vein-scales. b. Lateral vein-scales.
1b. Portion of hind-margin of wing, greatly enlarged, to show the fringe.
a. Border-scales. b. Fringe-scales.